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like tribe, or the curved-beak tribe, shape, form, size, is everything for their peculiar method of obtaining rations.

The Toucan feeds on insects, which lie deep in the corolla of flowers; it especially delights in tubular corollas, and has a great fondness for the rich, scarlet, fuschia-like clusters of the Rose de Monta, of Guayana. These clusters he seizes near the calyx, and by longitudinal movements of his powerful mandibles, aided by their serrated edges, saws them off, and then by his horny and fimbriated tongue, separates the insect portion from the vegetable, and swallows that which his palate approves of, like any other sensible bird. To see him hop from branch to branch, reach out his long, ponderous jaws, seize his breakfast, saw it off, as one sees a butcher in his stall, to see the parts rejected fall to the ground in petaliferous showers, and he maintain his equipoise, has been one of the most pleasant studies of my ornithological curriculum. I have made frequent post mortem examinations of his injectæ, and have always found the shields and remains of insects the most abundant in his craw.—R. P. STEVENS.

PHYSELLA NOT A FRESH-WATER SHELL. — Mr. Tryon called the attention of the Conchological section of the Philadelphia Academy of Natural Sciences, to the curious error committed by several conchologists in treating *Berendtia* (*Physella*) *Berendtii*, as a fluviatile mollusk. He supposed that the resemblance of the first generic name given to *Physa* was the cause of the error. This Mexican snail has a Glandiniform shell and Mr. Tryon believed that its true position would be found to be near to *Glandina*. The *Physella* has been included as a fluviatile mollusk in Mr. Binney's monograph, recently published by the Smithsonian Institution, and still more recently in Mr. Dall's Classification of the Linnæidæ, published in the "Annals of the New York Lyceum of Natural History. Mr. Tryon also made some remarks upon the Darwinian Theory of the origin of species as illustrated by the "groups" or subgenera of *Helices*, established by Albers, and stated his conviction that nowhere in the animal kingdom could more conclusive evidences of the truth of Darwinianism be adduced.

GEOLOGY.

DID A GLACIER FLOW FROM LAKE HURON INTO LAKE ERIE? I find on page 193, of Vol. 4 of the AMERICAN NATURALIST, an article by Professor J. S. Newberry, on "The surface Geology of the basin of the great lakes and the valley of the Mississippi," which I wish to criticise as to the position taken by the Professor, that formerly a glacier flowed from Lake Huron into Lake Erie. On page 195 the Professor states that "Lake Michigan, Lake Huron, Lake Erie, and Lake Ontario, are basins excavated in undisturbed sedimentary rocks. Of these, Lake Michigan is six hundred feet deep, with a surface level of five hundred and seventy-eight feet above tides; Lake Huron is five hundred feet deep, with a surface

level of five hundred and seventy-four feet; Lake Erie is two hundred and four feet deep, with a surface level of five hundred and sixty-five feet; Lake Ontario is four hundred and fifty feet deep, with a surface level of two hundred and thirty-four feet above the sea." "An old, excavated, now filled channel, connects Lake Erie and Lake Huron." And on page 200 the Professor states as his deduction. "2d. That the courses of these ancient glaciers corresponded in a general way with the present channels of drainage. The direction of the glacial furrows proves that one of these ice rivers flowed from Lake Huron, along a channel now filled with drift, and known to be at least one hundred and fifty feet deep, into Lake Erie, which was then not a lake, but an excavated valley, into which the streams of Northern Ohio flowed, one hundred feet or more below the present lake level." It will be granted, no doubt, that a glacier occupies the bed, or lowest part of the valley through which it flows, and, that like water, it flows from a higher to a lower point of elevation, or in other words, that it flows down hill, instead of up hill. But if Professor Newberry's position, that formerly a glacier flowed from Lake Huron into Lake Erie, be correct, then it must, in passing from the bed of Lake Huron into that of Lake Erie, have ascended a vertical height of two hundred and seventy-eight feet, for from the Professor's own showing the bed of Lake Erie is that number of feet above that of Lake Huron; for he states that the surface of Lake Huron is five hundred and seventy-four feet above the sea level, and that it is five hundred feet deep, which would make its bed seventy-four feet above the sea level; and he further states that the surface of Lake Erie is five hundred and sixty-five feet above the sea level and is two hundred and four feet deep, which locates its bed at three hundred and sixty-one feet above the sea level, and two hundred and eighty-seven feet above that of Lake Huron. If it be true, which is granted, as stated, that "an old, excavated, now filled channel connects Lake Erie and Lake Huron, then must it also be true, granting that the beds of these lakes occupied the same relative position to each other in the glacial period that they now do, that whatever glaciers flowed through it must have flowed from Lake Erie in the direction of Lake Huron, and found an outlet in that direction, instead of from "near the eastern extremity of Lake Erie into Lake Ontario; otherwise we shall have the phenomenon of a column of ice two hundred and fifty miles in length, by about twenty-five miles in width, saying nothing as to its thickness, lifting itself, by the mere force of gravity, from a lower up to a higher plane of elevation, which would appear to be impossible. The probabilities are that the furrows in the "old, excavated, now filled channel, connecting Lakes Erie and Huron," were made by running or floating icebergs, long ages after the work of excavating the beds of the great lakes by the glaciers had been completed, and not by true glacial ice. The difficulty of reconciling the observed facts in the case, seems to accrue from allotting too short a space of time to the glacial period. It would appear more perspicuous to allow an excavating period, corres-

ponding in time with the period of the greatest continental elevation, during which period the glaciers would naturally flow in the direction of the lowest plane of their excavations, finding their outlets accordingly. The work of excavation being completed, then comes a continental subsidence, the "lower drift period," during which the narrower channels of excavation are completely filled, and the larger ones partially. Then comes another continental elevation, not so great, however, as the first; this is the "old channel" period, during which the great lakes take form as such for the first time, and all those "old drift channels" were excavated by running water and floating icebergs. Then comes another continental subsidence, much greater than the first or "lower drift period;" this is the upper drift period, during which those "old channels" are completely filled, and the surface elevated above them from one to two hundred feet, and even more. Then comes another continental elevation, the beginning of the present status of appearances. — L. J. STROOP, *Waxahachie, Ellis County, Texas.*



MICROSCOPY.

AMERICAN MICROSCOPES. — The able refutation by your correspondent, C. S., in your issue of September, of the statements made by Dr. Hagen, with respect to American microscopes, cannot but have been read with gratification by all interested in the question. It is a fact much to be deplored, that in scientific questions — of all others — national vanity and prejudices should so far warp the judgment of otherwise very competent writers, as to drive them to the most obviously, to use Dr. Hagen's own mild epithet, "comical" conclusions.

Referring to German stands, for whose glorification Dr. Hagen seems to have written the papers in question, any one who, like myself, has had the opportunity of visiting the workshops of nearly all the most celebrated manufacturing opticians of Europe, will say that stands of continental manufacture, be they French or German, are sadly deficient in those improvements and appliances constituting a first class working English or American instrument. From this statement I except neither Mertz of Munich, nor Hartnack of Paris. Nachet, from the latter city, is the only maker whose instruments, in any way approach the perfection of either English or American stands. This deficiency in appliances and working means, in continental instruments, will be readily understood, when I mention that when I remonstrated upon the deficiency of stage motion in his best first class stands, Hartnack answered me: "Well, I see that you go for those English or American instruments looking like a steam engine, with screws, levers, and milled heads in every direction; *we do not believe in such toys here.*" As to the upright vertical model, it speaks for, or rather against itself, as anybody knows